COMSPHERE®
3610 SERIES DSUs

FEATURES

3610 SERIES

- FULLY INTEGRATED NETWORK MANAGEMENT CAPABILITIES FOR COMPREHENSIVE TESTING, MONITORING AND CONTROL
- ASCII TERMINAL INTERFACE ALLOWS AN ASCII TERMINAL FULL DIAGNOSTIC AND CONFIGURATION CONTROL OF STANDALONE VERSIONS ONLY
- NETVIEW LPDA-2 MANAGEMENT
- POINT-TO-POINT AND MULTIPOINT NON-DISRUPTIVE DIAGNOSTICS
- DDS RATES FROM 2.4 TO 64 Kbps
- USER-CONFIGURABLE DATA RATES FROM 150 TO 56,000 bps AND 64,000 bps (CLEAR CHANNEL)
- RATE ADAPTATION FOR POINT-TO-POINT AND MULTIPOINT CIRCUITS
- AVAILABLE IN STANDALONE AND CARRIER CARD VERSIONS
- CO-RESIDENT EIA-232D/V.24 AND CCITT V.35 INTERFACES

(continued on page 2)

COMSPHERE 3610 Series Data Service Units (DSUs) are highly reliable, state-of-the-art products ideal for today's network-managed digital environments. The COMSPHERE 3610 DSU enables users to take maximum advantage of today's digital services.

Operating in conjunction with Paradyne's COMSPHERE 6700 Series Network Management System (NMS), the COMSPHERE 3610 Series DSU provides a comprehensive network management solution that is both flexible and affordable. Network management options are expanded to include SNMP when used with the COMSPHERE 6700 and optional SNMP agent software. The series uses an advanced diagnostic technique to provide comprehensive network monitoring, testing and control over point-to-point and multipoint circuits. Network managers are provided with a comprehensive feature set and options that combine to maximize network availability, reduce equipment costs, and provide fully integrated network management control. The COMSPHERE 3610 also provides an SNA Diagnostic Interface for enhanced NetView LPDA-2 interoperability. Low-cost device control is provided via an ASCII terminal using the COMSPHERE 3610 ASCII support feature. This feature is available only in the standalone version.

FEATURES

3610 SERIES

(continued from page 1)

- AUTO RATE DETECTION
- CROSS PAIR DETECTION
- EXTENDED RANGE SUPPORT
- POINT-TO-POINT OR MULTIPOINT OPERATION
- STANDALONE VERSION FEATURES A USER-FRIENDLY FRONT PANEL WITH A TWO-LINE, 16-CHARACTER PER LINE, MENU-DRIVEN DISPLAY WITH KEYPAD FOR CONTROL OF LOCAL AND REMOTE DEVICES
- FULL COMPLEMENT OF LOCAL AND REMOTE LOOPBACKS
- INTEGRAL 511 TEST-PATTERN GENERATOR AND COMPARATOR
- THREE POWER LEVELS FOR COMPATIBILITY WITH RBOC AND LOCAL EXCHANGE CARRIER FIXED DATA RATES OF 19,200 bps
- ELASTIC STORE FEATURE FOR EXTENDED CIRCUIT APPLICATIONS
- POINT-TO-POINT OPERATION AS A LIMITED DISTANCE MODEM
- ASYNCHRONOUS OR SYNCHRONOUS SUPPORT ON ALL PORTS

3610 SERIES SPECIFICATIONS

DSU Module
Digital data services provided by Regional Bell Operating Companies (RBOCs) and Local Exchange Carriers (LECs)

Data Rate
Synchronous terminal rates of 2,400, 4,800, 9,600, 19,200, 56,000 and 64,000 bps

Elastic Storage Buffer
+/- 8 bits

Timing
DDS, internal, external or receiver

Data Format
Serial, synchronous, protocol-independent, binary data in full or half-duplex operation

Data Encoding
Bipolar return to zero; complies with AT&T Technical Reference 62310 - 1987

Transmit Levels
19,200 bps: -10, 0, or +6 dBm
9,600 bps: 0 dBm
All other speeds: +6 dBm

Receiver Sensitivity Level
-42 dBm at 56,000 bps
Transmit and Receive Impedances
135 ohms nominal

Digital Network Interface
3610 Standalone: 8-pin modular jack, USOC RJ48S
3611 Carrier Card: 50-pin connector, USOC RJ48T (one for slots 1-8, one for slots 9-16)

Network Management System Compatibility
COMSPHERE 6700 (6800) Series NMS
Device control via ASCII interface (Standalone only)

DTE Interface
25-pin subminiature connector (female)
EIA-232D/CCITT V.24 (ISO 2110)
34-pin connector (female)
CCITT V.35 (ISO 2593)

AC Power Requirements
3610 Standalone:
90-132 VAC, 60 Hz +/-3Hz, 0.15 amp:
13.4 watts max at 115 VAC

3611 Carrier Card:
Supplied by carrier: 80 watts max

3000 Series Carrier fan module:
Supplied by carrier: 45 watts

Environment
Operating temperature: 32° F (0° C) to 122° F (50° C)
Storage temperature: -4° F (-20° C) to 158° F (70° C)
Relative humidity: 5% to 90% non-condensing
Shock and vibration: withstands normal shipping and handling

Heat Dissipation at 115 VAC
3610 Standalone
32.4 BTU/hr max
3000 Series Carrier (16 DSUs plus SDU and fan module) 563 BTU/hr max

Dimensions
3610 Standalone:
Height: 2.13 inches (5.4 cm)
Width: 7.63 inches (19.4 cm)
Depth: 13.4 inches (34.0 cm)

3611 Carrier Card:
Height: 7.13 inches (18.1 cm)
Width: 0.9 inches (2.3 cm)
Depth: 13.4 inches (34.0 cm)

3000 Series Carrier:
Height: 10.5 inches (26.7 cm)
Width: 19.0 inches (48.3 cm)
Depth: 14.0 inches (35.6 cm)

Weight
3610 Standalone: 5 lb. (2.3Kg)
3611 Carrier Card: 1.5 lb (0.7Kg)
3000 Series Carrier: (16 DSUs plus SDU and fan): 70 lbs. (31.8 Kg)

Regulatory Approvals
FCC Part 15 - Class A digital device
FCC Part 68 - AW292J-61661-DD-N

3610 Standalone:
Listed UL 1950
Certified CSA C22.2, No. 220-M1986

3611 Carrier Card, 3000 Series Carrier:
Recognized Component UL 1950
CSA Safety - Certified CSA 22.2
No. 950-M89
3610 and 3611:
CSA Emissions - Class A digital apparatus
Bell Canada - "DCTE Specifications,"
July 1989, Issue 1

TDM/MCMP

- MULTICHANNEL MULTIPOINT (MCMP) FUNCTION THAT ALLOWS UP TO SIX NON-DISRUPTIVE, PROTOCOL INDEPENDENT DATA PATHS OVER A SINGLE MULTIPOINT CIRCUIT
- STANDALONE ONLY VERSION HAS 'FLEX' MUX FUNCTION--2 OR 6 PORTS: 1 OR 5 PORTS (DB25) IN THE EXPANDED HOUSING CONFIGURED AS EITHER ELECTRICAL EIA-232 OR V.35, AND 1 PORT ON THE BASE DSU AS EITHER EIA-232D OR V.35 CONNECTOR
- OPERATIONAL MODES OF MCMP, TDM, DSD AND MULTIPOINT DIAL RESTORAL BRIDGE
- ONE- OR TWO-PORT SHARING GROUPS THAT PROVIDE UP TO 6 PORTS
- AUTOMATIC TDM RECONFIGURATION TO A REDUCED DATA RATE UPON ENTRY INTO DIAL RESTORAL MODE
- INDIVIDUAL PORT TESTS AND LOOPBACKS
- ELASTIC STORE FEATURE PROVIDES A BUFFER ON EACH PORT TO SUPPORT DIGITAL OR ANALOG EXTENDED CIRCUITS
- DIGITAL BRIDGE FOR MULTIPOINT DIAL RESTORAL
- CONCURRENT OPERATION OF TDM AND DSD MODES

TIME DIVISION MULTIPLEXER (TDM)/MULTICHANNEL MULTIPOINT (MCMP) OPTION

Increased flexibility in network design and implementation is an important advantage of the Time Division Multiplexer/Digital Sharing Device (TDM/DSD 'Flex') option, while providing cost-effective data networking alternatives. The TDM/DSD 'Flex' function improves the use of digital facilities through bandwidth control and allocation. The TDM/DSD 'Flex' option can be controlled by the 6700 Series NMS, the Shared Diagnostic Control Panel (SDCP), or the COMSPHERE 3610 front panel.

TDM

The TDM will multiplex up to six channels onto a single point-to-point digital facility. Configured as a DSD, the DSU allows up to six polled-protocol devices to share a single point-to-point or multi-point digital facility. Configured as a host port-sharing device, the TDM/DSD 'Flex' shares up to six host ports for the primary purpose of disaster recovery. Three ports are used for the primary data path and three ports for automatic 'hot' spare during a front end port failure. The versatile TDM/DSD 'Flex' option when configured with the Dial Backup Module (DBM) card version, serves as the digital bridge for multipoint single-call dial restoral applications.The TDM/DSD 'Flex' option requires an expanded housing to the COMSPHERE 3610 standalone version and a separate card slot in the COMSPHERE 3000 Series Carrier with the COMSPHERE 3611 card version.

MCMP

The MultiChannel MultiPoint (MCMP) option builds on TDM/DSD features by supporting all TDM/DSD functions while adding MCMP functions to create one of the most powerful and flexible DSUs in the industry. The sophisticated MCMP option uses a patented technology to consolidate multiple applications and protocols over a single multipoint digital facility. Up to six individual data channels can be configured for your multipoint circuit. Each channel is non-interfering with other channels and protocol insensitive. These characteristics broaden the number of applications available to allow both point-to-point and multipoint applications to work on the same mulitpoint circuit.

MCMP comes in both a two- and six-port standalone version that can be mixed on the same circuit. This means you do not have to buy a six-port version for all remote sites (when all you need is a two-port version at some sites and a six-port version at other sites). The unique any port to any port mapping feature from the central site DSU to remote DSUs, adds flexibility to your configuration choices. This unique mapping feature allows remote site configurations to support both MCMP and DSD applications. As with the TDM/DSD option, up to two DSD groups can be configured or use the digital bridge mode for multipoint single-call dial restoral applications.

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MCMP *(continued from page 3)*

The TDM/MCMP option is supported by both the COMSPHERE 3610 standalone version and the COMSPHERE 3611 card version. The standalone version provides 'Flex' function which allows each port to be configured as either RS232 or V.35 electrical. An expanded housing which provides either one or five standard (DB25) connectors is required for either two- or six-port TDM/MCMP respectively. When V.35 electrical is selected, a DB25 to V.35 conversion cable is required for ports two through six. No conversion cable is required for port one because it is assigned to either an RS232D or V.35 connector on the base DSU unit.

The card version supports two- or six-port TDM/MCMP with port one as either RS232D or V.35 connector and ports two through six as RS232. A DB26 to V.35 connector cable is required when port one is assigned as a V.35 connection. Two-card slots are required to support TDM/MCMP in the COMSPHERE 3000 Series Carrier. Thus, allowing a maximum of eight MCMP DSUs per carrier.

TDM/MCMP SPECIFICATIONS

Composite Speeds
TDM: 2,400; 4,800; 9,600; 19,200; 38,400; 56,000; and 64,000 bps

MCMP: 56,000 bps (48,000 usable for data)

Port Speeds
Synchronous terminal rates of: 1,200; 2,000; 2,400; 4,000; 7,200; 8,400; 9,600; 12,000; 14,400; 16,800; 18,000; 19,200; 28,800; 32,000; 38,400; 48,000; 56,000; and 64,000 bps (1,200 bps synchronous not supported at 56,000 bps and 64,000 bps composite line rate)

Asynchronous Character Format
6, 7, 8, 9, or 10 bits; 1 or 2 stop bits

Elastic Storage Buffers
+/- 5 bits per second

Timing
DDS, internal (all ports), external (provided by selected port)

Digital Sharing Device (DSD)
Two groups up to six ports
Contention: RTS or ungoverned

DIAL BACKUP MODULE SPECIFICATIONS

ISDN BRI Module

Application
Full-duplex data transmission via ISDN BRI U-Interface for point-to-point or multipoint facilities. Integrated NT1 included.

Modulation and Frequency
2B1Q line coding with 4-level pulse amplitude modulation (PAM) at 80K baud

Channel Equalization
Receiver: Automatic adaptive equalizer with echo cancellation

Communication Line
2-wire BRI ISDN line

Data Rates
56 and 64 Kbps (Note that ISDN DBM or DBM-I use proprietary rate adaption to support data rates of less than 64 Kbps.)

DBM Interface
Compatible with 3600 Series 2-wire and 4-wire Switched 56 DBMs

Receive Interface
Dynamic Range: Operates on 2-wire loops as defined an ANSI T1.601-1992
Impedance: 135 Ohms

Switched Network Interface
3610 DSU: 8-pin non-keyed modular jack, USOC SJA11 U-Interface Connector
3611 DSU: (One or two) 50-pin connector, pinout same as RJ21X

Transmit Interface
Signal Level : 13.5 dBm nominal over frequency band from 0 Hz to 80K Hz
Impedance: 135 Ohms

V.32bis Module

Analog Dial Module
Full or half-duplex data transmission via analog 2-wire DDD

Communications Line
2-wire PSTN line

Data Rate
Synchronous or asynchronous terminal rates of 2,400, 4,800, 9,600, 12,000 and 14,400 bps

PSTN Network Interface
3610 Standalone: 8-pin modular jack
Permissive: USOC RJ11C
Programmable: USOC RJ45S
3611 Carrier Card: 50-pin connector (one for slots 1-8, one for slots 9-16)
Permissive: USOC RJ21X
Programmable: USOC RJ27X

SW56 Modules

Digital Dial Module (DM)
Full or half-duplex data transmission via: 4-wire Switched 56 Kbps or 2-wire Switched 56 Kbps, point-to-point

Communications Line
4-wire Switched 56 Kbps (AT&T ACCUNET, AT&T SDDN, and U. S. Sprint VPN56) 2-wire Switched 56 Kbps (DataPath Compatible)

Data Rate
Synchronous or asynchronous terminal rate of 56,000 bps

4-Wire Switched 56 Kbps Network Interface
3610 Standalone: 8-pin modular jack USOC SJA56
3611 Carrier Card: 50-pin connector, USOC SJA57 (one for slots 1-8, one for slots 9-16)

2-Wire Switched 56 Kbps Network Interface
3610 Standalone: SJA48 6-pin modular jack
3611 Carrier Card: 50-pin connector (Pinout same as RJ21X)

OPTIONAL FEATURES

3610 back panel

3610 with TDM back panel

DIAL BACKUP MODULE (DBM) OPTIONS

The Dial Restoral option offers complete flexibility in all areas of user application recovery. Dial Restoral provides automated, single-call, point-to-point and multipoint restoral over either the ISDN BRI network, the two-wire Public Switched Telephone Network (PSTN), two-wire Switched 56 Digital Network, or four-wire Switched 56 Digital Network.

Point-to-point restoral is accomplished using an integral Dial Backup Module (DBM). Dial line rates supported for the ISDN BRI connection include full duplex, 56,000 or 64,000 bps operation. Dial line rates supported for the PSTN connection include full duplex, 14,400 bps, 12,000 bps, 9,600 bps, 4,800 bps, or 2,400 bps operation.

The dial restoral connection can be controlled by the COMSPHERE 6700 Series NMS, the Shared Diagnostic Control Panel (SDCP), or the COMSPHERE 3610 front panel. While in dial restoral mode, the DSU automatically looks back to the digital facility and evaluates its health, switching back as soon as service is restored. This automatic "lookback" feature helps minimize line costs by eliminating extended long-distance line charges once the digital facility becomes operational again. Networks requiring continuous availability can now attain uptime goals without dedicated around-the-clock staffing at the network control center. An automated dial tone test during non-usage periods informs network operations if the dial restoral circuit is disconnected. This eliminates the requirement for expensive and time-consuming manual testing of dial restoral circuits by network operations.

In addition to its automatic restoral capabilities, the versatile Dial Restoral Option features password and call-back security. When enabled, these security options prevent unauthorized access and ensure integrity of the digital facility. A 10-number directory is capable of selecting alternative destinations for the automated dial restoral process, as well as call-back numbers for security.

Multipoint dial restoral is easy using the digital bridge feature of the card version TDM/MCMP option and the DBMs, both of which are housed in the COMSPHERE 3000 Series Carrier. Each digital bridge provides bridging for five remotes. Additional bridges can be interconnected to the first or primary bridge, up to a maximum of six (including the primary bridge), to back-up a total of 25 remotes. The COMSPHERE 6700 Series NMS maintains complete control of the network during the multipoint restoral process.

DIAL BACKUP MODULE

- WIDE SELECTION OF AUTOMATIC DIAL RESTORAL OPTIONS WITH ISDN BRI (1B+D), ANALOG V.32bis (14.4 Kbps) OR 2- OR 4-WIRE SW56
- UNIQUE “DIAL TONE” MONITORING TO ENSURE AVAILABILITY OF RESTORAL CIRCUIT
- AUTOMATIC RETURN TO DIGITAL LEASED LINE AFTER RESUMING NORMAL SERVICE

CONTROLS AND INDICATORS

The COMSPHERE 3610 Diagnostic Control Panel (DCP), 3611 face plate, and the optional SDCP feature a full complement of controls and indicators. They incorporate a menu-driven, English-language display to monitor on-line performance, change operating modes, and control local and remote testing.

Indicators

These display signal activity at the DTE/DSU interface and provide operational status information.

Alpha-Numeric Display

The two-line by 16-character LCD on the front panel displays status information and serves as the primary user interface for equipment setup, reconfiguration, and diagnostic operation.

Controls

Function keys (F1, F2, etc.) are used to select options and move within the menu structure for equipment configuration, testing and similar operations.

Basic DSU Indicators

TXD/103 - Transmit data
RXD/104 - Receive data
RTS/105 - Request-to-send
CTS/106 - Clear-to-send
DSR/107 - Data set ready
DTR/108 - Data terminal ready
LSD/109 - Line signal detect

DSU Status Indicators

OK - Normal operation
Alarm - Fault in DSU, DBM or facility; streaming DTE
Test - Test in progress
Dial - DBM active
Front Panel - Indicates card selected by SDCP (3611 only)
SDCP- Controls and Indicators
Select - Provides SDCP selection of carrier DSU
Bck Up - Indicates selected DSU in dial backup mode

DCP Controls

▲– Moves up one menu level

◁– Moves one position to left on menu

▲▲– Moves to top of menu

▷– Moves one position to right on menu

F1, F2, F3 - Multifunction keys defined by display line located above them

ORDERING INFORMATION

Description	Model Number
Standalone DSU	3610-A4-001
Nest DSU	3611-B4-001
COMSPHERE 3000 Carrier with 115 VAC Power	3000-B1-201
COMSPHERE 3000 Carrier Options:	
Fan Module (115 VAC)	3000-F1-007
Shared Diagnostic Control Panel (with ribbon cable)	3000-F1-001
Shared Diagnostic Unit (SDU)	3000-F1-002
Rear Connector Plate	3000-F1-021
Filler Panel	3000-F1-008
NMS EIA-232 Interface Connector	6821-F1-513
Remote-site Adapter Cables (M6AYand M6BK - 7' and 5' respectively)	6821-F1-518
Network Adapter Cable	1.5' 3600-F2-503
50-pin to eight 8-pin Modular Network Interfaces (DSU/JM8 lease) Adapter for Digital or Leased Lines	3600-F2-503
ASCII Interface Cable (DSU Control Channel RJ11 to DB25 DTE connector)	10' 3600-F3-504
S/A DSU with 2 port TDM/MCMP 'Flex'	3610-A4-020
S/A DSU with 6 port TDM/MCMP 'Flex'	3610-A4-024
Nest DSU with 6 port TDM/MCMP	3611-B4-003
V.35 Interconnect Cable for card version only	3600-F3-500

Description	Model Number
Field upgrade options to existing DSUs	
S/A DSU upgrade to 2 port TDM/MCMP 'Flex' Field Install	3600-F3-209
S/A DSU upgrade to 6 port TDM/MCMP 'Flex' Field Install	3600-F3-213
NEST DSU upgrade to 6 port TDM/MCMP Field Install	3600-F4-205
Cables	
V.35 Interconnect Cable for card version only (18")	3600-F3-500
DSUs with integrated dial restoral modules:	
S/A R3 DSU w/ ISDN BRI DBU	3610-A4-026
Nest R3 DSU w/ISDN BRI DBU	3611-B4-026
S/A R3 DSU w/14.4 Kbps analog DBU	3610-A4-002
Nest R3 DSU w/14.4 Kbps analog DBU	3611-B4-002
Standalone R3 DSU w/4W-SW56 DBU	3610-A4-014
Nest R3 DSU w/4W-SW56 DBU	3611-B4-014
Standalone R3 DSU w/2W-SW56 DBU	3610-A4-012
Nest R3 DSU w/2W-SW56 DBU	3611-B4-012
Card version dial restoral modules for multipoint circuits for use with TDM card version optioned as digital bridge:	
ISDN BRI DBM-I M/P Dial Restoral	3611-B4-016
14.4 Kbps analog DBM-V M/P Dial Restoral	3611-B4-005
4W-SW56 DBM-S M/P Dial Restoral	3611-B4-008
2W-SW56 DBM-D M/P Dial Restoral	3611-B4-010

Description	Model Number
Field upgrade options to existing DSUs	
ISDN BRI Dial Restoral Field Install	3600-F3-026
14.4 Kbps analog Dial Restoral Field Install	3600-F3-201
4W-SW56 Dial Restoral Field Install	3600-F3-056
2W-SW56 Dial Restoral Field Install	3600-F3-256
Network Interface Module (NIM) for use with COMSPHERE 3000 Carrier and 3611 card version DSU:	
Permissive for ISDN BRI, 14.4 Kbps and 2-wire SW56 Kbps (1 per 8 carrier slots)	3000-F1-003
Programmable for 14.4 Kbps (1 per 8 carrier slots)	3000-F1-004
For 4-wire SW56 Kbps (1 per 8 carrier slots)	3000-F1-025
50-pin mass termination cable (1 per NIM) Permissive RJ21X	10' - 3000 F1-013 30' - 3000-F1-014
Programmable RJ27X Telephone Cables for use with Standalone COMSPHERE 3610 Series DSU	
3610 Series DSU Modular RJ11C (6-pin) Permissive DDD (PSTN) plug	7' - 4400-F1-531 14' - 3600-F3-503 25' - 4400-F1-533
Modular RJ45S (8-pin) Programmable DDD (PSTN) plug	7' - 4400-F1-541 14' - 4400-F1-543 25' - 4400-F1-544
Telephone Cords for use with Standalone COMSPHERE 3610 Series DSU	
Modular RJ11C (6-pin) (for 2-wire SW56 Kbps)	14' - 3600-F3-503
Modular RJ45S (8-pin) (for 4-wire SW56 Kbps)	14' - 3600-F3-501 25' - 3600-F3-502

For additional information on this or any Paradyne product or service, contact the office nearest you. Or, dial toll-free (USA and Canada) 800 482-3333 or call 813 530-8623. Fax (USA) 813 530-2103.

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